

**GOVT. HOLKAR (MODEL AUTONOMOUS)  
SCIENCE COLLEGE, INDORE**



(An ISO 9001:2015 & ISO 14001:2015 Certified Institution)



# SSR DOCUMENT

2017-18 TO 2021-22

## CRITERION -7

**Institutional Values and Best Practices**

**Metric No.:7.1.3**

**Liquid Waste Management**

तमसो मा ज्योतिर्गमय



### 7.1.3 Liquid Waste Management

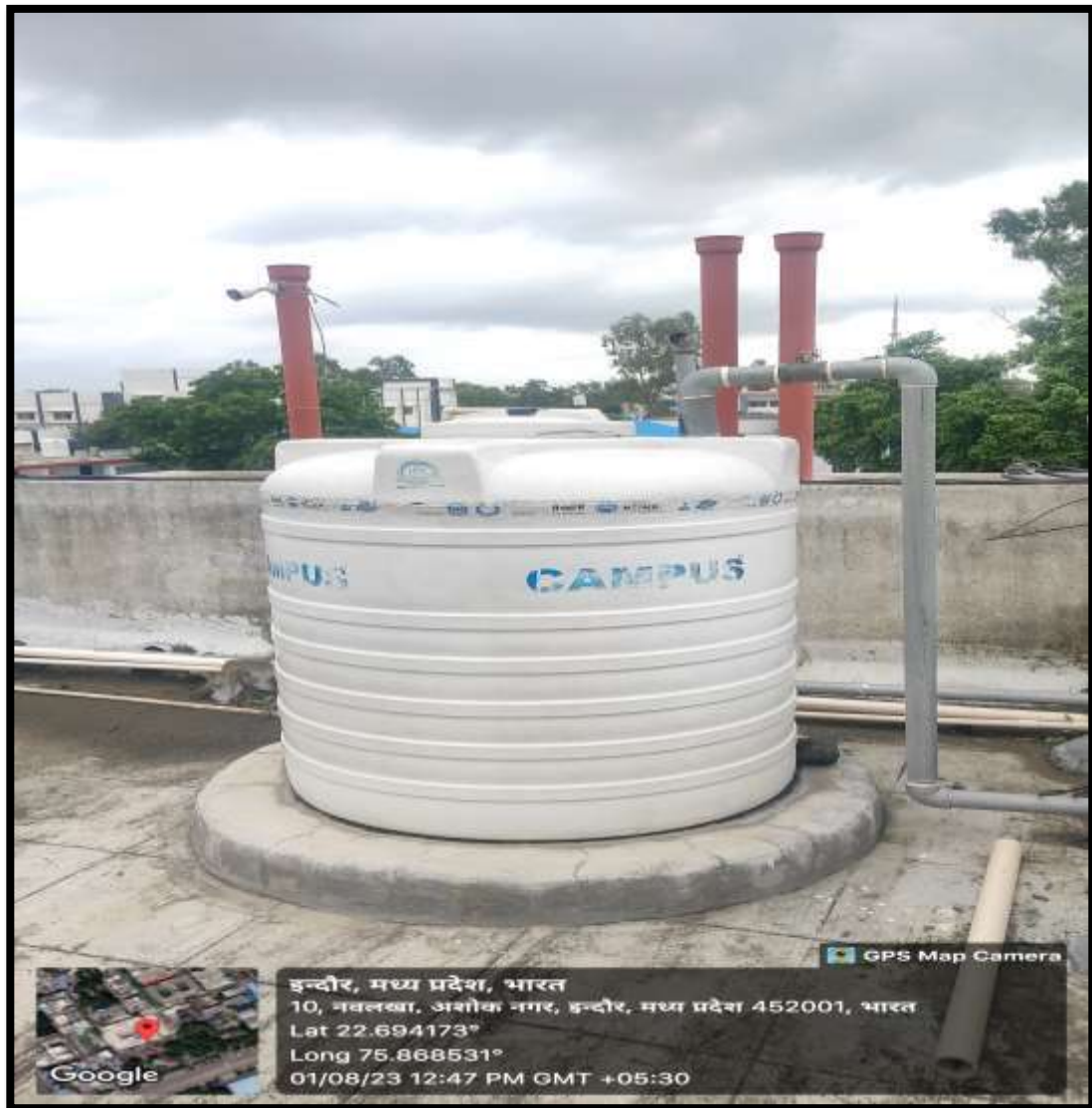
#### RO Waste Water Recycling at Department of Computer Science



1A. Waste Water from the RO Unit at the terrace of the Computer Science Department collected in a **Collection Tank**.



1B. RO Unit Waste Water collected in the **COLLECTION TANK** which is connected to the **flushes of the Toilets** in the Department of Computer Science



In our continuous pursuit of sustainable and eco-friendly practices, the Department of Computer Science at [Institution Name] has implemented a RO Waste Water Recycling initiative. This innovative approach involves the collection and reuse of waste water generated by the Reverse Osmosis (RO) unit located on the terrace of the Computer Science Department.

### **Process Overview:**

**Waste Water Collection:** The waste water produced by the RO unit is collected in a dedicated Collection Tank strategically positioned on the terrace. This tank acts as the central reservoir for the recycled waste water.

**Reuse in Toilets:** The recycled waste water from the Collection Tank is diverted and connected to the flushes of the toilets within the Department of Computer Science. This recycled water is utilized exclusively for flushing purposes.

### **Benefits and Impact:**

**Water Conservation:** The RO Waste Water Recycling initiative significantly reduces water wastage by repurposing wastewater that would otherwise be discarded.

**Resource Efficiency:** By utilizing recycled water for flushing purposes, the initiative contributes to the efficient utilization of water resources within the department.

**Eco-Friendly:** The initiative aligns with our institution's commitment to sustainable practices and demonstrates our proactive approach toward environmental conservation.

**Educational Opportunity:** The initiative serves as an educational tool, creating awareness among students and staff about water conservation and wastewater recycling.

### **Challenges and Future Plans:**

While the current implementation focuses on toilet flushing, future plans may explore the possibility of utilizing recycled water for other non-potable purposes within the department.

Periodic maintenance and monitoring of the Collection Tank and filtration system are essential to ensure the quality and safety of the recycled water.

The RO Waste Water Recycling initiative at the Department of Computer Science exemplifies our dedication to sustainable practices and responsible resource management. By repurposing waste water for flushing, we contribute to water conservation and reinforce the importance of environmental stewardship within our academic community.



## Government Holkar (Model Autonomous) Science College, Indore (M.P.) Bhawarkuan, A.B. Road, Indore (M.P.) 452001

### 7.1.3: Chemical Waste Water Management (pre-neutralization Tanks and ETP)

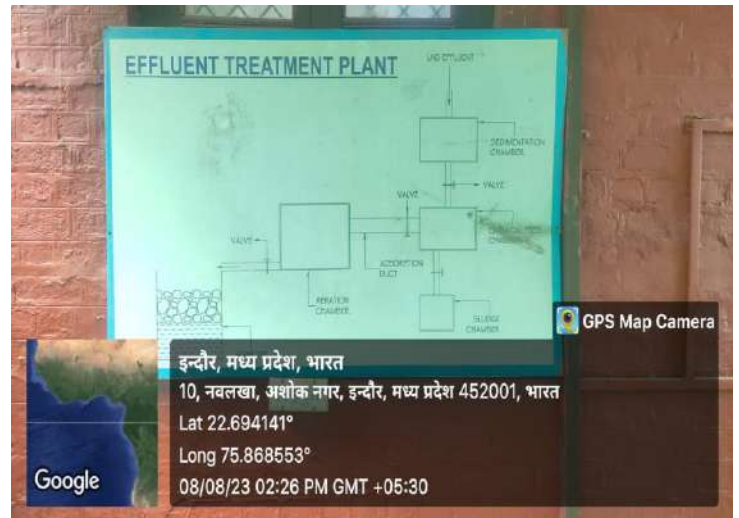
As the Pilot Effluent Treatment Plant (ETP) is connected to the Main Laboratory only, Therefore, in other Laboratories, **small buckets are kept as Pre-neutralization Tanks**, where students pour used solutions after the practical instead pouring them directly into the Sink. The effluent collected in the respective tanks is then finally sent to the ETP for further processing.



#### COLLECTION OF USED SOLUTION IN THE PRE-NEURALIZATION TANKS



THE EFFLUENT COLLECTED IN THE PRE-NEUTRALIZATION TANKS IS THEN COLLECTED AND TAKEN TO THE ETP UNIT FOR FURTHER PROCESSING



AFTER NEUTRALIZATION AND OTHER PROCESSING, THE PROCESSED EFFLUENT IS RELEASED TO THE CHAMBERS



## Special Achievement Department of Chemistry

ETP plant is waste water treatment plant used for treating contaminants in the form of organic matter, inorganic matter, heavy metals and suspended solids. Knowing the importance of quality of underground water, the department of chemistry, Holkar science college, Indore developed and designed ETP for lab effluent. The plant was designed to remove the impurities in various steps. The ETP plant consists of mainly three types of tank known as sedimentation tank, chemical feed tank and aeration chamber.

The sedimentation tank collects the effluent and it is allowed to settle down under gravity. The settled sludge is removed manually. The effluent is passed at a steady rate through the controlled valve into the chemical treatment chamber. Thereafter chemical is added to neutralize the effluent with constant stirring in it. Due to constant stirring small flocculent is converted into bigger size. The treated effluent is then passed in adsorption duct containing activated charcoal for adsorption of particles. Slower flow rate of effluent increases the adsorption rate. The impurities get segregated and after this it is moved in aeration chamber. The DO level of treated water is increased with a provision provided in the aeration chamber.

It has been found that DO level increases once the treated water is collected in aeration chamber followed by process to improve DO level. This water is then passed in soak pit consisting of Pebbles which helps in further filtration before water reaches the ground.

Students performed experiments to check the efficiency of ETP analyzing DO, COD, TDS, pH, Hardness, conductivity before and after treatment. Studies revealed that TDS was reduced after treatment. pH was maintained to neutral level. Experimental data revealed decrease in hardness level also.



रसायन विभाग के ETP का उद्घाटन

## **LABORATORY EFFLUENT TREATMENT PLANT**

### ***Objective and Relevance:***

*Water is a vital resource that forms the basis of life. Ground water is usually of acceptable quality due to natural filtration through ground. The untreated water from laboratories and industries poses serious threat not only the environment but also to the ground water of the locality. An important aspect of ground water pollution is the fact that it persists underground for many years once it is polluted.*

*Knowing the importance of the quality of ground water, the department of Chemistry, Govt. Holkar Science College has planned to establish an Effluent Treatment Plant (ETP), the idea of laboratory Effluent Treatment Plant is an innovative and original concept design and developed by the Department of Chemistry, Govt. Holkar Science College, Indore The objective is to improve the quality of water to make it more acceptable for a specific end use.*

### ***Design of Plant & Principle:***

*Both physico-chemical processes are being involved in treatment like; sedimentation, filtration, chemical coagulation / flocculation, surface adsorption and aeration.*

*These processes will be carried out in the following steps:*

- i) **Sedimentation Chamber:** The effluent from laboratory will be collected in this chamber. Large flocculated particles will settle down at the bottom of the chamber and sludge will be removed manually.*
- ii) **Chemical Feed Chamber:** The preliminary process in treatment is chemical clarification by coagulation and filtration for removal of impurities, depending upon the character of effluent. The pH is measured and then the required chemicals are used to treat effluent with constant stirring. The process will convert small flocks into bigger size.*
- iii) **Adsorption Duct:** Charcoal is a remarkable absorber because of its large porous surface. The amount of purification depends upon the rate at which charcoal is exposed to impure water. The slower the water passes through the duct filled with charcoal the larger the time it is exposed to contaminants. We have a valve to regulate the rate of flow of water over charcoal. Thus varieties of impurities will be segregated here.*
- iv) **Aeration Chamber:** The aerator is submerged in water draw to atmospheric air below the water surface this creates fine bubbles and mixes air in water. Aeration water treatment is effective for the management of dissolved gases like CO<sub>2</sub>, H<sub>2</sub>S etc. and volatile organic compounds (VOCs). It is also effective in precipitating dissolved iron and manganese. In aeration, dissolved CO<sub>2</sub> is removed which further improves the pH of water.*
- v) **Soak Pit:** This pit is especially filled with pebbles for further filtration before the treated water penetrates into the ground.*

### ***Technical Committee Members***

- 1. Dr. Rajeev Dixit*
- 2. Dr. Sandeep Gohar*

### ***Chief Mentor***

*Dr. Anamika Jain  
HOD, Chemistry*

### ***Chief Patron***

*Dr. Suresh T. Silawat  
Principal*



शासकीय होलकर विज्ञान महाविद्यालय, इन्दौर (म0प्र0)  
रसायनशास्त्र विभाग

क्रमांक : .....2019

दिनांक: 06.12.2019

प्रति

प्राचार्य

शासकीय होलकर विज्ञान महाविद्यालय

इन्दौर (म0प्र0)

विषय-रसायनशास्त्र प्रयोगशालाओं से निष्कासित रसायन युक्त दूषित जल के उपचार हेतु प्रस्ताव।

महोदय,

उपरोक्त विषयांतर्गत निवेदन है महाविद्यालय की रसायनशास्त्र प्रयोगशालाओं से निष्कासित रसायन युक्त दूषित जल के उपचार किये जाने की योजना प्रस्तावित है-

निम्न चरणों में योजना का क्रियान्वयन किया जावेगा-

प्रथम चरण - निष्कासित जल का संग्रहण छानने के पश्चात् बड़े चेम्बर में किया जायेगा।

द्वितीय चरण - प्रथम चेम्बर से प्राप्त जल का द्वितीय चेम्बर में रसायनों की सहायता से अम्लीय तथा क्षारीय अशुद्धियों हेतु उपचार किया जायेगा, तथा जल का pH 7 निर्धारित किया जावेगा। स्कंदन (Coagulation) उपरांत अशुद्धियों को बाहर निकालकर ठोस रूप में परिवर्तित किया जायेगा।

तृतीय चरण - द्वितीय चेम्बर से प्राप्त जल को चारकोल से रंगहीन करने के साथ ही जल में घुलित ऑक्सीजन (DO) को बढ़ाया जायेगा।

उक्त प्रक्रिया से प्राप्त शुद्ध जल से न सिर्फ उद्यानों में सिंचाई की जा सकेगी वरन् पर्यावरण संरक्षण एवं भूजल के सुधार हेतु महाविद्यालय अपने स्तर पर कांश्रगर प्रयास कर सकेगा। उक्त प्रस्ताव को लागू करने हेतु अनुमानित व्यय निम्नानुसार है-

- |   |           |
|---|-----------|
| 1. नलियों का परस्पर युग्मन एवं संग्रहण हेतु चेम्बर का निर्माण संख्या 02 | - 10000/- |
| 2. द्वितीय एवं तृतीय कक्षों का निर्माण संख्या 02                        | - 10000/- |
| 3. जल शुद्धि हेतु आवश्यक रसायन एवं ऑक्सीजन प्रदाय हेतु पम्प्स           | - 5000/-  |
| कुल अनुमानित राशि रु .  | - 25000/- |

उक्त व्यय एवं योजना क्रियान्वयन के अनुमोदन हेतु प्रस्ताव प्रस्तुत है।

विभागाध्यक्ष

NO एवं लेखापाल  
HLE  
31/01/2020  
7/12

निष्ठा  
महोदय  
7/12

रसायनशास्त्र विभाग, शासकीय होलकर विज्ञान महाविद्यालय, इन्दौर (म0प्र0)

दिनांक: 12.06.2020

क्रमांक: ...../रसा10/2020

प्रति,

प्राचार्य  
शासकीय होलकर विज्ञान महाविद्यालय,  
इन्दौर (म0प्र0)

विषय- अग्रिम रुपये .....25000/- ..... अक्षरी रु. ....पच्चीस हजार..... का समायोजन।

महोदय,  
आपकी स्वीकृति से ..... **LABORATORY EFFLUENT TREATMENT PLANT**... कार्य हेतु  
दिनांक ..... हेतु दिनांक ..... को S.B. .... खाते से प्राप्त  
अग्रिम राशि रुपये .....25000/-..... अक्षरी रु. ....पच्चीस हजार.. में से रुपये .....9881/-.....निम्नांकित देयकों  
के अनुसार व्यय किया गया तथा बकाया राशि रु. ....15119/- ... अक्षरी रु. ....पंद्रह हजार एक सौ  
उन्नीस..... S.B. .... खाते में जमाकर उसकी स्लीप तथा खर्च ब्याउचर संलग्न प्रेषित है।

कृपया उक्त राशि का समायोजन करने/अधिक व्यय रु.....निरंक..... का भुगतान करने का कष्ट

करें।

क्रमांक	फर्म का नाम एवं पता /व्यक्ति का नाम	दिनांक व क्रमांक/कोड	बिल	व्यय राशि	T.W.F.	कुल राशि
01	अशोक इलेक्टिक हाउस, इन्दौर	20.02.2020 / 3951		901/-		901/-
02	हरि ओम सेनेटरी, इन्दौर	20.02.2020 / 306		980/-		980/-
03	बॉम्बे मशीनरी एण्ड टूल्स सीडीकेटर, इन्दौर	20/02/2020		8000/-		8000/-
						9881/-

विभागाध्यक्ष

रसायनशास्त्र विभाग

संलग्न- भुगतान किये जाने वाले बील।

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हरि ॐ सेनेटरी

Bath Fitting & Accessories

411, खातीवाला टैंक, इन्दौर

किसान, कास्ता, प्रकाश, सूर्या पाईप्स एवं फिटिंग, सी.पी. बाथ फिटिंग्स

क्र.

306

दिनांक

1/1

श्रीमान्

प्रिन्सिपल होमकार रोड जे अमरे

Qty.	Particulars	Rate	Amount	
			Rs.	Ps.
10	was Capin		600	
10	was pipe		300	
10	was V.D.C.		80	
			980	
		TOTAL		

विशेषता : सेनेटरी एवं प्लम्बिंग कार्य

वास्ते : हरि ॐ सेनेटरी

Certified that the articles listed in the bill have been actually received and entered on S. R. Page No. 264-254  
Dated 20/10/10 and that their quality is good and the quantities are correct. Their prices have been checked and recommended for payment of Rs. 980/-  
(Rs. Nine Hundred Eighty Rs. Only)

Head of Department

Passed for Payment for Rs. 980/-  
(Rs. Nine Hundred Eighty Rs. Only)

Principal

TIN NO : 23AHCP54461L1Z5

Rate Code : 23

Tax Invoice (Cash)

PHONE : 0731-254016

888990012

769770012

# ASHOK ELECTRIC HOUSE

9/2, KAPIL CHAMBER, SIYAGANJ, MAHARANI ROAD, INDORE (MP)

E-mail : ashokelectrichouse@gmail.com

Reverse Charg YES/NO

ORIGINAL FOR RECEIPIEN

To: PRINCIPAL HOLKAR COLLEGE INDORE URD	Invoice No. : 3951	Date : 20/02/2020
	Challan No. :	Date :
	Order No. :	Date :
	LR No. :	Date :
	No of Pkt : 0	
	Transport :	

S No.	DESCRIPTION	HSN CODE	GST%	QTY	RATE	DISC%	Taxable Ar
1	PANCHAM BOX PVC 6M	8538	18.00%	1.00PCS	55.000	15.25%	46.0
2	PANCHAM BOX PVC 4M	8538	18.00%	1.00PCS	40.000	15.25%	33.9
3	MARU MODULAR SWITCH MAGIC 20A	8536	18.00%	1.00PCS	40.000	15.25%	33.9
4	MARU MODULAR SOCKET 16A	8536	18.00%	1.00PCS	80.000	15.25%	67.3
5	MARU MODULAR SWITCH MAGIC 10AMP	8536	18.00%	6.00PCS	20.000	15.25%	101.1
6	MARU MODULAR 5 PIN SOC M151 6A	8536	18.00%	2.00PCS	36.000	15.25%	61.1
7	RR MULTISTAND WIRE 2.5MM	8544	18.00%	24.00MTR	20.580	15.25%	418.0
Sub. Total :-				36.00			763.0

Certified that the articles listed in the bill have been actually received and entered on S. R. Page No. 9163-254 Dated 20/02/20 and that their quality is good and the quantities are correct. Their release have been checked and recommended for payment of Rs. 901/- (Rs. Nine Hundred One Only)

Head of Department  
Passed for Payment for Rs. 901/- (Rs. Nine Hundred One Only)

STATE BANK OF INDIA A/C NO. 53003150960

IFS CODE SBIN0030134

HSN CD.	QTY	Taxable value
8544	24.00 MTRS	418.60
8538	2.00 PCS	80.51
8536	10.00 PCS	264.42
TOTAL	36.00	763.53

Principal

SGST @9% ON 763.53 (Add) 68.9  
CGST @9% ON 763.53 (Add) 68.9  
ROUNDED OFF (Add) 0.

INVOICE AMT IN WORDS :- Rs. Nine Hundred One Only

GST AMT IN WORDS :- Rs. One Hundred Thirty Seven & Forty Paise Only (rs. 137.40)

G.TOTAL : 901.

## NOTE

All disputes are subject to Indore jurisdiction  
Goods once sold will not be taken back  
Our responsibility ceases as soon as goods are delivered to carriers  
10% Interest will be charged if bill is not paid within a week

For : ASHOK ELECTRIC HOUSE

Checked By

Authorised Signatory

Email : bmtsindore@gmail.com

**TAX INVOICE** GSTIN : 23AADFB3447R1Z8

**BOMBAY MACHINERY & TOOLS SYNDICATE**

81, Siyaganj, Basemem, INDORE - 452007 Ph. 0731- 2531294, 2536431, 4040471/72

No.

Time

Date

M/s

Add.

Mob./Ph

Party's

GSTIN

S.No.	HSN	Description	Qty.	Amount
1				
2		Electric Crockery		3143
3				
4		Aceti		
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
			SGST 7%	1028.5
			CGST 6%	1028.5
			IGST %	
			G. TOTAL	2000

Thanks ! सभी प्रकार के न्याय क्षेत्र इन्हीं रहेगा।  
मेरा दुज्जा माल आपसे नहीं होगा।

Auth

RSM

Sign

Certified that the articles listed in the bill have been actually received and entered on S. R. Page No. 56/2-253  
Dated 20/02/2020 and that their quality is good and the quantities are correct. Their prices have been checked and recommended for payment of Rs. 8000/-  
(Rs. eight thousand Rs only)

Head of Department

Passed for Payment for Rs. 8000/-  
(Rs. eight thousand Rs only)

Principal

जमा पर्ची PAY IN SLIP

भुगतान: CASH TRANSFER

भारतीय स्टेट बैंक STATE BANK OF INDIA

शाखा/Branch HSC Date 17/06/2020

Type of A/c SB/CA/HD/CC/H

खाते का प्रकार: धनत बैंक/घातु/आवती जमा/केश क्रेडिट/सावधि क्रम

खाता के  
A/C No.

53015567899

FOR THE CREDIT OF THE BANK ACCOUNT OF Principal  
(T.B) Holkar SC के बैंक खाते में जमा करने हेतु

विवरण: चेक का विवरण (यदि कोई हो) DETAILS OF CASH/CHEQUE Deposit	रकम/AMOUNT ₹ p
खाते में जमा किया गया स्टेट Cash Deposited in this Account	Cheque
नकदी रकम/घातु/क Cash Handing over	
कुल जमा TOTAL DEPOSIT	15119/-

रकम/AMOUNT IN WORDS

Fifteen thousand  
on hundred rupees

कार्यालयीन उपयोग हेतु / For Official Use

एसडब्ल्यूओ SWO	रकम अधिकारी/पासकर्ता अधिकारी Cash Officer/Passing Officer

जमा पर्ची PAY IN SLIP नगर आंतरण CASH TRANSFER  
 भारतीय स्टेट बैंक STATE BANK OF INDIA  
 शाखा/ Branch H9C Date 14/06/2020

Type of A/c SB/CA/HD/CC/TL  
 खाते का प्रकार वचत बैंक/चालू/आवृत्ति जमा/क्रेडिट/सावधि ऋण  
 खाता क्र. 53015567899  
 A/C No.

FOR THE CREDIT OF THE BANK ACCOUNT OF Principal  
 (16) Holkar Sc के बैंक खाते में जमा करने हेतु

नगर बैंक के विवरण (पूरी व सुरक्षी और) DETAILS OF CASH/CHEQUE(S) (overleaf)	राशि / AMOUNT
खाते में नगदी जमा Cash Deposit in the Account	Cheque
नगदी संचयन/चालू खाते की Cash Handling Charges	
कुल जमा TOTAL DEPOSIT	15119/-

रा. शब्दों में / Rs. IN WORDS Fifteen thousand  
 one hundred and nineteen

कार्यालयीन उपयोग हेतु For Official Use	
एस.डब्ल्यू.ओ. SWO	रोकड़ अधिकारी/पासकर्ता अधिकारी Cash Officer/Passing Officer